

## TRENDS AND FUTURE DIRECTIONS IN ISLAMIC EDUCATIONAL TECHNOLOGY: A SYSTEMATIC REVIEW

*Trend dan Hala Tuju Masa Depan Dalam Teknologi Pendidikan Islam: Satu Kajian Sistematis*

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### Abstract

This systematic literature review examines the current trends and future directions in Islamic educational technology, addressing the pressing need to explore the integration of digital tools in Islamic education. Employing the PRISMA framework searching techniques, the study synthesizes findings from 22 selected scholarly works from the year 2020 until 2024 from databases such as Scopus and Eric. Three overarching themes emerge: 1) Islamic perspectives on innovation, creativity, and technology; 2) the intersection of technology and Islamic thought; and 3) Digital religion and new media in Islamic preaching and education. Future directions in Islamic educational technology aim to enhance further engagement, accessibility, and relevance in contemporary society, fostering an enlightened Muslim community adept in both traditional teachings and modern educational strategies.

**Keywords:** Application technology; educational technology, educational trends

### Abstrak

*Kajian literatur sistematik ini mengkaji trend semasa dan hala tuju masa depan dalam teknologi pendidikan Islam, menangani keperluan mendesak untuk meneroka integrasi alat digital dalam pendidikan Islam. Menggunakan teknik carian rangka kerja PRISMA, kajian ini mensintesis penemuan daripada 22 karya ilmiah terpilih dari tahun 2020 hingga 2024 daripada pangkalan data seperti Scopus dan Eric. Tiga tema terhasil daripada carian iaitu: 1) perspektif Islam mengenai inovasi, kreativiti dan teknologi; 2) penyimpangan antara teknologi dan pemikiran Islam; dan 3) Agama digital dan media baharu dalam dakwah dan pendidikan Islam. Hala tuju masa depan dalam teknologi pendidikan Islam bertujuan untuk meningkatkan penglibatan, kebolehcapaian, dan perkaitan dalam masyarakat kontemporari bagi memupuk komuniti Islam yang berpandu yang mahir dalam kedua-dua strategi pengajaran secara tradisional dan moden.*

**Kata Kunci:** Aplikasi teknologi; teknologi pendidikan, trend pendidikan

## 1.0 INTRODUCTION

Technology integration into educational contexts has significantly transformed the teaching and learning landscape. Within this broad shift, Islamic educational technology has emerged as a specialized domain that seeks to address the unique needs of learners and educators in Islamic contexts (Erma Sova 2023). This article explores the trends and future directions in Islamic educational technology, comprehensively analyzing its current state, effectiveness, and potential challenges. The journey of educational technology, in general, has been marked by rapid technological advancements and increasing digital literacy. Islamic educational technology, however, has carved a niche within this broader evolution by focusing on the specific pedagogical requirements of Islamic education (Salsabila et al. (2023; Mustaffa and Hussin 2022). Early iterations of such technology were primarily digital translations of traditional teaching methods, incorporating basic multimedia elements to enhance engagement.

## 2.0 CURRENT TRENDS IN ISLAMIC EDUCATIONAL TECHNOLOGY

Several vital trends characterize the current state of Islamic educational technology. One prominent trend is the increasing use of mobile applications (Jurayev 2023). With smartphones and mobile internet proliferation, educational content is now more accessible than ever. Mobile applications dedicated to Islamic education offer a range of features, from Quran recitation and memorization tools to interactive lessons on Islamic history and jurisprudence. Another significant trend is the incorporation of gamification (W. Oliveira et al. 2023; Zeybek and Saygi 2024). By integrating game-like elements such as points, badges, and leaderboards, educational technology aims to increase learner engagement and motivation. This approach has effectively engaged younger audiences accustomed to interactive and visually stimulating content.

Personalized learning is also gaining traction in Islamic educational technology. Artificial intelligence and machine learning advances enable these tools to adapt to individual learning styles and paces, providing customized learning experiences. Recent research shows that this personalized approach has become trending enhances learning outcomes and ensures that students remain engaged and motivated (Zhong 2023; Yuyun and Suherdi 2023). The effectiveness of Islamic educational technology is multifaceted, encompassing several dimensions. First, these tools provide a platform for consistent and structured learning, which is particularly beneficial in contexts where access to formal Islamic education may be limited. By offering comprehensive curricula and resources, educational technology ensures that learners have access to high-quality Islamic education, regardless of their geographical location.

Moreover, the interactive and multimedia-rich nature of these tools enhances cognitive engagement. Studies have shown that interactive content can improve retention and comprehension, making learning more effective. Furthermore, the ability to track progress and receive immediate feedback through these platforms supports continuous improvement and helps identify areas needing further attention.

### 3.0 LITERATURE REVIEW

#### 3.1 Artificial Intelligence (AI) Enhanced Teaching Materials

Islamic educational technology has seen significant advancements in recent years, reflecting broader global trends in digitalization and technological integration in education. The review examines recent studies on the incorporation of artificial intelligence (AI), mobile technologies, and the holistic integration of Islamic values with modern education systems. Syahrizal et al., (2024) emphasize the transformative potential of AI in enhancing educational materials for Islamic instruction. Their study focuses on the development of multimedia-based teaching resources for senior high schools in West Sumatra, employing the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). The integration of AI into these materials aims to improve learning efficiency and competency development among students. The researchers highlight the importance of continuous model evaluation and suggest future research directions in AI's role in Islamic education. This aligns with global trends where AI is increasingly used to customize learning experiences and provide real-time feedback to learners. The rapid advancement of technologies characterizing the Fourth Industrial Revolution has significant implications for character education in Islamic contexts. By integrating a social reconstruction curriculum, Islamic education can help students adapt to modern challenges while preserving their cultural and spiritual identities.

Efforts to integrate Islamic values with scientific education are crucial for modern Islamic educational systems. Fahyuni et al., (2020) discuss the use of seamless mobile media to facilitate this integration among millennial students. Their study demonstrates that incorporating Islamic teachings with scientific inquiry enhances students' understanding and appreciation of both domains. This approach fosters a deeper connection to Islamic values and equips students with the skills needed to thrive in a technologically advanced world. Wong-A-Foe, (2023) addresses the multifaceted implications of AI in Indonesian education, focusing on tutors, governance, and ethical perspectives. The study discusses the potential of AI to revolutionize educational practices while also raising critical ethical considerations. This analysis is crucial as it emphasizes the importance of aligning technological advancements with ethical and religious principles. A recent study proposes future research directions in studying the intersection of AI and Islamic education in Indonesia (Taufik et al., 2023). Their anthropological inquiry highlights the societal implications of AI in higher education, challenging Western-centric perspectives and contributing to a decolonized research narrative. This forward-looking approach emphasizes the need for inclusive and culturally relevant research methodologies to understand the evolving landscape of Islamic educational technology. Figure 1 below shows the aims of education according to Muslim Scholars (Muhammad, 2014).

Combining religious teachings with secular education helps individuals see the connection between faith and everyday life. This is intended to refute the accusations of some parties who claim that religious knowledge has nothing to do with secular knowledge, although religious knowledge can be integrated with secular knowledge to achieve glory in the afterlife (Muhammad, 2014). This integration can bridge the gap between religious and scientific knowledge and lead individuals to view the two as complementary rather than contradictory.

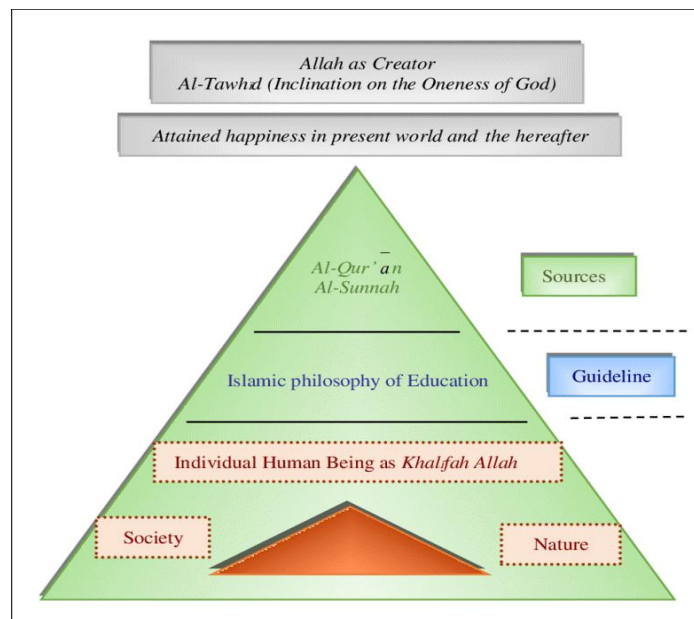


Fig. 1 Aims of Education According to Muslim Scholars

### 3.2 Challenges and Future Direction

Despite the numerous advantages, Islamic educational technology faces several challenges. One major challenge is the need for cultural and contextual relevance. Educational content must be carefully designed to align with the cultural and religious values of the target audience. This requires collaboration with scholars and educators to ensure accuracy and appropriateness. Another challenge is the digital divide. While mobile applications and online platforms have increased accessibility, a significant portion of the population still has limited access to digital devices and the Internet. Addressing this gap is crucial to ensuring that the benefits of educational technology are equitably distributed. Looking ahead, the future of Islamic educational technology appears promising. The continued integration of advanced technologies such as virtual reality (VR) and augmented reality (AR) has the potential to create even more immersive learning experiences.

For instance, these technologies can transport learners to historical sites, simulate real-life scenarios, and provide interactive 3D models, thereby enriching the educational experience (Kuna et al., 2023). Additionally, the development of community-based platforms can foster collaborative learning and peer support. By creating online communities where learners can interact, share resources, and support each other, educational technology can facilitate a more connected and supportive learning environment.

## 4.0 METHODOLOGY

### 4.1 Identification

The systematic review process consists of three main phases, which are used to select appropriate papers for this report. The first step is keyword discovery and searching for related similar terms. Accordingly, after all relevant keywords were determined, search strings were created for Scopus and Eric databases (see Table 3.1). In the first step of the systematic review process, 465 articles were successfully retrieved from both databases as part of the present research.

Table 3.1 The search string

Scopus	TITLE-ABS-KEY ( technology AND islam AND app* ) AND ( LIMIT-TO ( PUBYEAR , 2020 ) OR LIMIT-TO ( PUBYEAR , 2021 ) OR LIMIT-TO ( PUBYEAR , 2022 ) OR LIMIT-TO ( PUBYEAR , 2023 ) OR LIMIT-TO ( PUBYEAR , 2024 ) ) AND ( LIMIT-TO ( SUBJAREA , "SOC" ) OR LIMIT-TO ( SUBJAREA , "ARTS" ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) ) AND ( LIMIT-TO ( SRCTYPE , "j" ) ) AND ( LIMIT-TO ( PUBSTAGE , "final" ) )  Date of Access: June 2024
Eric	technology AND islam AND app* Date of Access: June 2024

## 4.2 Screening

In the screening phase, we examine potentially relevant research items to identify content that matches our predefined research questions. Important criteria in this process are the selection of topics related to trends and future directions in Islamic educational technology. To ensure accuracy, we remove all duplicate articles from the list of searched publications. In the first screening phase, 397 publications were excluded, while in the subsequent phase, 74 papers were assessed using clear exclusion and inclusion criteria (see Table 3.2). Our focus is on complete articles as they contain practical recommendations. It is noteworthy that this review is limited to English-language publications from 2020 to 2024. Ultimately, no publications were excluded due to duplicates.

Table 3.2 The selection criterion

Criterion	Inclusion	Exclusion
Language	English	Non-English
Time line	2020-2024	< 2020
Literature type	Journal (Article)	Conference, Book, Review
Publication Stage	Final	In Press
Subject Area	Social Sciences	Other than social sciences

## 4.3 Eligibility

A total of 74 articles were prepared for the third step, the so-called eligibility. All article titles and main content were thoroughly reviewed and fit into the present study with the current research objectives. Finally, 22 articles are available for review.

## 4.4 Data Extraction and Analysis

In this study, an integrative analysis served as one of the assessment strategies to explore and synthesize various research designs (quantitative methods). The primary objective was to identify relevant topics and subtopics. The initial data collection stage marked the inception of the thematic development process. Figure 2 illustrates 22 publications seeking assertions or material pertinent to the study's topic. Subsequently, the authors evaluated existing significant studies related to trends and future directions in Islamic educational technology. The methodologies employed across these studies and their research findings underwent thorough investigation. Collaborating with co-authors, the lead author developed themes and identified inconsistencies in the theme design process. Three experts assessed each subtheme's clarity, significance, and suitability to validate the analysis. This expert review phase established domain validity based on the following questions:

- a) What are Islam's philosophical and ethical perspectives on innovation, creativity, and technology?

- b) How do Islamic perspectives influence the development and ethical considerations of modern technologies such as AI and robotics?
- c) How are digital platforms and new media reshaping the practice and dissemination of Islamic teachings and religious authority in the contemporary era?

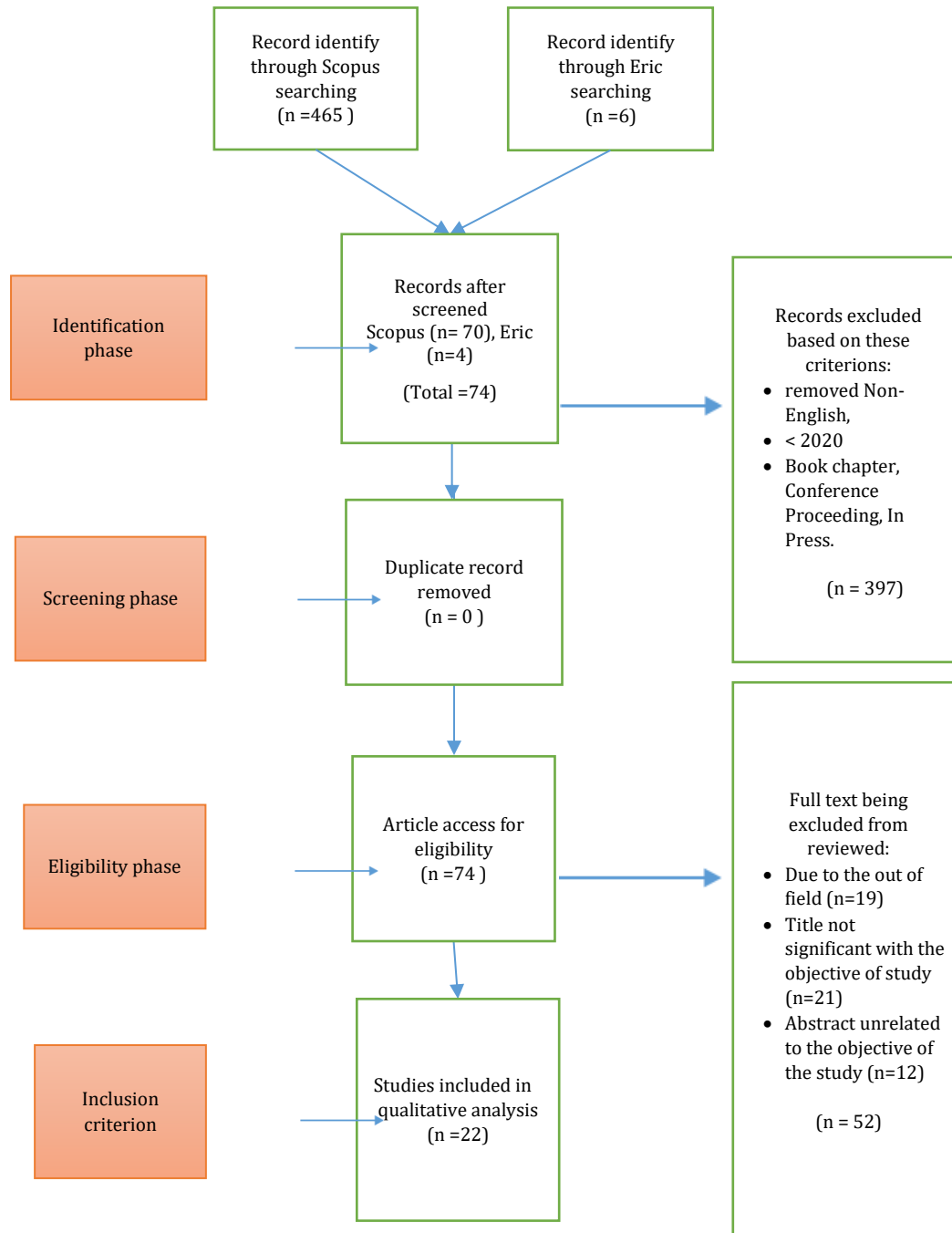


Fig. 2 PRISMA analysis table for proposed searched study

## 5.0 RESULTS AND FINDINGS

This study aims to investigate current trends and future directions in Islamic educational technology. Through a comprehensive and systematic review of recent scholarly works, three principal themes have emerged: 1) Islamic perspectives on

innovation, creativity, and technology; 2) the intersection of technology and Islamic thought; and 3) Digital religion and new media in Islamic preaching and education. Each theme addressed its challenges and opportunities.

### **5.1 Islamic Perspectives on Innovation, Creativity, and Technology**

The intersection of Islam and technology reveals a complex perspective encompassing philosophical, ethical, and practical dimensions. The analysis of Islamic perspectives on innovation and creativity, particularly concerning technology, underscores the religion's inherent encouragement of progress and development as long as it aligns with Islamic principles and values. Islamic thought has historically embraced innovation and creativity, grounded in the teachings of the Qur'ān and Sunnah. Abdelgalil (2023) emphasizes that the rich classical Islamic heritage, characterized by significant contributions from Muslim scholars and scientists, was driven by a religious duty to promote creativity in human existence.

Moreover, the instrumentalist view of technology, which sees it merely as a tool devoid of inherent moral value, has been challenged within Islamic discourse. Arzroomchilar & Olamaiekopaie (2022) argue that technology is inherently value-laden and necessitates a philosophical and moral evaluation. They propose that the integration of Heidegger's concept of *Gestell*, which deals with the enframing nature of technology, with the work of Tabātabā'i on *i'tibārīat* and virtue ethics, provides a framework for understanding technology from an Islamic perspective. This approach underscores the need for a balance, warning against secularization and deviation from Islamic moral values in the modern technological era. Artificial Intelligence (AI) presents a contemporary frontier where Islamic perspectives on technology are critically examined. Hussain et al., (2023) explore the potential of AI in arbitration, a common dispute resolution mechanism in both modern and Islamic contexts. Their study finds that while AI can enhance the efficiency and effectiveness of arbitration processes, existing arbitration laws, both international and national, are not sufficiently developed to integrate AI technologies fully. Importantly, from an Islamic viewpoint, AI is not prohibited if it serves humanity. However, AI cannot replace human arbitrators, emphasizing the importance of maintaining human judgment in decision-making processes.

These studies collectively highlight that Islamic perspectives on innovation and technology are not monolithic but somewhat nuanced and contextual. They reflect a continuous dialogue between traditional Islamic values and contemporary technological advancements. All underscore the importance of aligning technological progress with Islamic ethical and moral principles. This alignment ensures that technology serves humanity positively while preserving Islamic societies' religious and moral fabric.

### **5.2 The Intersection of Technology and Islamic Thought**

Islamic foresight, deeply rooted in the teachings of the Qur'ān and Sunnah, offers a historical perspective on future-oriented thinking within the Muslim community. Ali et al. (2024) discuss how future thinking, although underemphasized, is a critical aspect of Islamic thought that has historically influenced various domains, including science, technology, arts, governance, and social justice. Their study underscores the importance of developing future thinking as a capacity within the Muslim world to achieve long-term social transformation. By integrating Islamic ethics and principles into foresight practices, Muslim communities can navigate modern challenges while staying true to their religious values. Alemi et al. (2020) explored the use of social robots as teaching assistants in Islamic religion classes in Iran, finding high levels of

acceptance and preference among elementary students. This study suggests that integrating robotics into education can effectively support teaching Islamic concepts, provided the technology is culturally adapted and ethically aligned with Islamic teachings. The positive reception of robot-assisted learning highlights the potential for innovative educational tools to complement traditional teaching methods.

Addressing the issue of gadget addiction among children from an Islamic perspective, Khairuldin et al. (2021) emphasize the role of Prophet Muhammad's teachings in guiding modern parenting practices. Their study identifies the detrimental effects of excessive gadget use on children's health and moral development and proposes three main strategies based on the Prophet's methods. These strategies highlight the enduring relevance of Islamic teachings in addressing contemporary issues, demonstrating that traditional values can offer practical solutions in the digital age. These studies collectively illustrate that a dynamic interplay between modern advancements and traditional values characterizes the intersection of technology and Islamic thought.

The investigation into artificial intelligence (AI) and its representation of religious concepts reveals significant insights into how AI interacts with complex socio-political identities, including religion. Tsuria & Tsuria, (2024) analyzed AI tools' conversations about Judaism, Islam, and Christianity, finding that AI often struggles to represent intricate religious issues accurately. Their study emphasizes that while AI attempts to present diverse opinions and promotes respectful engagement with religious topics, its representations remain superficial and lack depth. This highlights the need for more sophisticated AI systems to better understand and convey religious thought's complexities. The convergence of technology and Islamic thought presents a complex yet intriguing landscape, highlighting the need for a nuanced understanding of how modern advancements align with traditional Islamic principles. This analysis illustrates the complex relationship between technology and Islamic values.

### **5.3 Digital Religion and New Media in Islamic Preaching and Education**

Islamic education and preaching in the digital age necessitate creativity and technological adaptation to engage the millennial generation and counter radical influences. As technological advancements accelerate, educators and preachers face the challenge of making Islamic teachings appealing and relevant to younger audiences. Wulandari (2022) highlights the importance of incorporating the Wasathiyah approach, which promotes moderation and balanced views in Islamic education, to deter the influence of extremist groups. Raya (2024) emphasizes that digital platforms and social media have transformed traditional preaching methods, enabling preachers to reach a broader audience and maintain relevance in contemporary society. Thohir et al. (2021) explore the perspectives of Islamic Religious Education teachers on the Independent Learning policy, showing that increased use of mobile learning technologies supports the transition to more autonomous educational models.

Digital platforms and innovative applications have revolutionized religious learning and engagement. The Tarannum Smart Learning Application, discussed by Awang et al. (2022) exemplifies how multimedia technology can facilitate the learning of Quranic recitation techniques, making them accessible to both Muslims and interested non-Muslims. Similarly, Zamhari & Han (2021) examine the Cariustadz.id platform as a cyber fatwa and preaching medium, providing easy access to religious guidance for urban middle-class Muslims. Serik et al. (2023) highlight the role of digitalization in modernizing traditional religious practices in Kazakhstan,

demonstrating how specialized applications and social media representations are reshaping religious engagement.

The integration of Islamic knowledge with modern educational methods fosters a balanced and moderate discourse. Haryani et al. (2021) explore the iLearning approach, which incorporates innovative learning applications to improve the quality of Islamic religious education. This approach aligns with the findings of Djihadah et al. (2023) who advocate for the use of ICT-based literary teaching to enhance students' engagement and understanding. Prakasita & Marijan (2021) provide an example of how online preaching by groups like Surabaya Hijrah uses digital media to form collective piety among urban middle-class millennials. These advancements underscore the potential of combining traditional Islamic teachings with contemporary educational strategies to promote a moderate and informed understanding of Islam. By leveraging digital technologies, educators and preachers can effectively reach and influence a broader audience, contributing to the development of a more balanced and enlightened Muslim community.

## 6.0 DISCUSSION AND CONCLUSION

Islamic educational technology is experiencing significant advancements and transformations, driven by the need to engage a tech-savvy generation and to counter radical influences through balanced and moderate teachings. The incorporation of digital platforms, multimedia applications, and mobile learning technologies has revolutionized the dissemination and accessibility of Islamic knowledge. Innovations such as the Tarannum Smart Learning Application and the Cariustadz.id platform exemplify the use of technology to facilitate Quranic learning and provide easy access to religious guidance. The iLearning approach and ICT-based literary teaching further highlight the integration of modern educational strategies with traditional Islamic teachings, promoting a balanced understanding and encouraging moderate discourse. Three principal themes have emerged through a comprehensive and systematic review of recent scholarly works. Future directions in Islamic educational technology will likely continue to focus on leveraging digital tools to make religious education more engaging, accessible, and relevant to contemporary society, fostering an informed and enlightened Muslim community. This trend points towards an increasingly digital and interconnected approach to religious education, emphasizing the importance of innovation and adaptability in teaching methods.

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